

USSR,

UDC 51:801

APRESYAN, YU. D.

"Semantic Transformations and Syntagmatic Filters"

V sb. Mash. per. i prikl. lingvist. (Machine Translation and Applied Linguistics -- collection of works), vyp. 14, Moscow, 1971, pp 3-42 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V673)

Translation: This paper comprises two parts in the first of which the semantic classification of the verbal substantives of the type of "request," "reward," "worry" is more precisely defined. The compatability of this category of words is described in terms of the lexical functions of Mel'chuk-Zholkovskiy. The second part of the paper is devoted to a classification of restrictions on the applicability of the rephrasing rules formulated in terms of the mentioned system. The rephrasing rules have the form of permutations applied to deep structures represented in the form of trees denoted by symbols of the Basic language. It turns out that it is not always possible uniquely to determine whether a given substitution is applicable by using the limited set of attributes. However, it is possible to formulate the general principle: "the freedom to rephrase is greater the less marked the rephrasing means and the context in which the initial expression is used." "The least marked is, of course, the context in which the initial word realizes the minimum lexical

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APRESYAN, YU. D., Mash. per. i prikl. lingvist., vyp. 14, Moscow, 1971, pp 3-42

and grammatical valence and is used in a simple nonextended, affirmative, non-negative, nonmodal sentence in the indicative mood of present time in grammatically unmarked form. The absence of any of the listed attributes increases the marked nature of the sentence." The defined hierarchy of marking can be given also in the rephrasing media.

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172 022 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--INVESTIGATION OF THE MECHANISM OF CHANGES OF RS CHARACTER OF  
NEUROVACCINE IN PASSAGES IN THE PRESENCE OF BROMODEOXYURIDINE -U-  
AUTHOR-(03)-CHERNOS, V.I., APRIDONIDZE, K.G., GHENDON, YU.Z.  
CCOUNTRY OF INFO--USSR  
SOURCE--J GEN VIROL 6(3): 355-359. 1970  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BROMINATED ORGANIC COMPOUND, VIRUS, SKIN PHYSIOLOGY, NECROSIS,  
INTERFERON  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FAME--3001/0929 STEP NO--UK/0000/70/006/003/0355/0359  
CIRC ACCESSION NO--AP0126588  
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126588

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NEUROVACCINIA VIRUS PROPAGATED IN THE PRESENCE OF BROMODEOXYURIDINE LOSES THE CAPACITY TO PRODUCE NECROSIS IN THE SKIN OF RABBITS. MECHANISMS UNDERLYING THIS LOSS WERE STUDIED. THE POPULATION UNDER STUDY CONSISTED PREDOMINANTLY OF VIRUS PARTICLES CAPABLE OF PRODUCING NECROSIS (RS PRIME POSITIVE) AND A SMALL PORTION OF PARTICLES WHICH HAD LOST THIS CAPACITY (RS PRIME NEGATIVE). AN RS PRIME NEGATIVE CLONE ISOLATED FROM THE POPULATION INDUCED AN INHIBITOR OF INTERFERON TYPE IN RABBIT SKIN, WHICH MARKEDLY INHIBITED REPRODUCTION OF RS PRIME POSITIVE VIRUS STRAINS AND CONSEQUENTLY THE CAPACITY OF THESE STRAINS TO PRODUCE NECROSIS. FACILITY: MOSCOW RES. INST. VIRAL PREP., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 622.24.05:69.034.2.002.72

GALITSKIY, B.M., Engineer. APRISHKO, P.G. Engineer (Baku Branch of the State Institute for the Planning of Petroleum Specialized Constructions)

"Erection of Supports on a Floating Drilling Rig"

Moscow, Montazhnyye i Spetsial'nyye Raboty v Stroitel'stve, No 4, Apr 71, pp 12-14

Abstract: The assembly of the floating drilling rig "Khazar" in Baku consisting of a 50.5 x 45m pontoon of 7.25m height with four 5.6x5.6 m support columns 9m long, designed from drilling 6000m wells at 60 m sea depth, is described. Each support consists of nine sections 10 to 11.5m long and weighing from 52 to 77 ton each, of lattice construction. Each section is made of sheet steel 40-85mm thick and thick wall pipes. All joints were manually welded by an a.c. arc with special care. Sections were assembled by means of a floating 140 ton crane with 80.5m lift.

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Acc. Nr:

AP0044617

Ref. Code: UR0497

PRIMARY SOURCE: Klinicheskaya Meditsina, 1970, Vol 48,  
Nr 1, PP 119-126

AFFECTION OF THE LIVER AND BILE DUCTS IN SYSTEMIC  
SCLERODERMIA

Aprosina, Z. G.; Guseva, N. G.;  
Potekayeva, M. A.; Gritsman, N. N.

On the basis of examinations of 180 patients with systemic scleroderma the authors revealed the character and incidence of clinical signs of involvement of the liver bile ducts; in 30 cases (in 19 — according to autopsy data, in 11 — according to biopsy of the liver) morphological changes in the liver were studied.

REEL/FRA  
19771294

APSE, T.

Econ

REPORT ON THE ASSOCIATION OF THE  
Article by G. Lenev and L. Anet-Merle, Pravda, Moscow, 24 January 1972,  
p. 2

A year has passed since the formation of the Radio Equipment Production Association. What is this form of management yielding? And what are its prospects?

It has successfully fulfilled the assignment of the first year of the five-year plan with respect to all 13 items. The volume of production, labor productivity, and profits all grew quite rapidly and had been accomplished. All this appears in favor of the direction of the association, although for such a short time the reserves and possibilities for improving its activity have by no means been exhausted.

The structure of the association has been worked out. Necessary regulations have been established on relations between its enterprise and the state of production as its enterprise has been analyzed. A definite role has been indicated for the production specialization of enterprises. We have done much work on the side and in their development. In the future, overcoming a certain psychological barrier, especially among the managers who are supposedly "young" independent.

The creation of a unified party organization for the association has been of noticeable help in the solution of these problems. It played an important role in the indication of a successful socialist competition year. The shops and sections, doing everything for the party and socialist competition were held. They facilitated the establishment of motivated and efficient relations between the enterprises of the association.

We have already eliminated duplicate production in small enterprises. Each kind of production effort is now concentrated at one of the enterprises of the association. During this past year, however, we were able to improve only those measures which did not require large capital investments or major reconstruction.

172 066 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--RADIATIVE TRANSPORT WITHIN AN ABLATING BODY -U-  
AUTHOR--(02)-APSHTEYN, E.Z., YEFIMOVA, L.G. A  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIDKOSTI I GAZA,  
JAN.--FEB. 1970, P. 148-153  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--PHYSICS  
  
TOPIC TAGS--RADIATIVE COOLING, RADIATIVE HEAT TRANSFER, ABLATIVE MATERIAL,  
ABLATIVE COOLING, MOTION EQUATION, TRANSPORT EQUATION, ABSORPTION  
COEFFICIENT, ABLATIVE HEAT SHIELD, THERMAL RADIATION, HEAT RADIATION,  
GAS DYNAMICS, HEAT TRANSFER COEFFICIENT  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1992/1777 STEP NO--UR/0421/70/000/000/0148/0153  
  
CIRC ACCESSION NO--AP0112763  
UNCLASSIFIED

2/2 066

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0112763

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF THE STEADY MOTION OF THE LIQUID FILM ON THE SURFACE OF AN ABLATING BODY, WITH ALLOWANCE FOR HEAT TRANSFER BY RADIATION FROM THE INTERIOR OF THE BODY. AN APPROXIMATION IS PROPOSED, USING WHICH THE EQUATION OF MOTION CAN BE SEPARATED FROM THE ENERGY AND RADIATIVE TRANSPORT EQUATIONS. THE SOLUTIONS TO THE ENERGY AND RADIATIVE TRANSPORT EQUATIONS ARE THEN USED TO OBTAIN AN ANALYTICAL SOLUTION TO THE EQUATION OF MOTION. TO THIS END, THE TEMPERATURE PROFILES (OBTAINED NUMERICALLY) ARE APPROXIMATE BY THE EXPONENTIAL CURVE OF A QUADRATIC FUNCTION OF THE COORDINATES. GRAPHS ARE PLOTTED, SHOWING THE INFLUENCE OF THE ABSORPTION COEFFICIENT, THE TEMPERATURE AND THICKNESS OF THE HEAT SHIELD, THE RADIANT FLUX EMITTED BY THE GAS THE SURFACE TEMPERATURE, AND THE REFLECTION COEFFICIENT ON THE TEMPERATURE PROFILE. IT IS SHOWN THAT NEGLECT OF RADIATIVE TRANSPORT WITHIN A BODY CAN LEAD TO GREATLY UNDERESTIMATED VALUES FOR THE ABLATION RATE. FACILITY: MOSKOVSKII GOSUDARSTVENNYI UNIVERSITET, MOSCOW, USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--THERMODYNAMIC CALCULATION OF THE T-P-X PHASE DIAGRAM OF THE BISMUTH  
LEAD SYSTEM -U-  
AUTHOR-(02)-APTEKAR, I.L., BASKAKOVA, V.B. *A*  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(6), 1305-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--BISMUTH ALLOY, LEAD ALLOY, HIGH PRESSURE EFFECT, ALLOY PHASE  
DIAGRAM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3008/1249 STEP NO--UR/0020/70/191/006/1305/1308  
CIRC ACCESSION NO--AT0138260  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0138260

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHASE DIAGRAM FOR BI-P8, WHICH CAN BE CONSIDERED AS THE RESULT OF THE SUPERPOSITION OF THE "SIMPLEST" PHASE DIAGRAMS (6 IN THIS CASE), CAN BE CALCD. BY USING THE MODEL OF REGULAR SOLNS. (D. KAMENETSKII, 1964) TO CALC. EACH OF THE SIMPLE PHASE DIAGRAMS. THE APPEARANCE OF A NEW REGION OF STABILITY WAS FOUND FOR THE GAMMA PHASE IN THE 0.7-0.9 ATOM FRACTION OF BI BEGINNING WITH A PRESSURE OF SIMILAR TO 10 KILOBARS. FACILITY: INST. FIZ. TVERD. TELA, MOSCOW, USSR.

UNCLASSIFIED

031 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--PHASE EQUILIBRIUMS IN A BISMUTH THALLIUM SYSTEM UNDER PRESSURE -U-  
AUTHOR--TONKOV, E.YU., APTEKAR, I.L. A  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1) 202-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--BISMUTH ALLOY, THALLIUM ALLOY, HIGH PRESSURE EFFECT, EUTECTIC,  
INTERMETALLIC COMPOUND, THERMAL ANALYSIS, PHASE EQUILIBRIUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1988/0629 STEP NO--UR/0126/70/029/001/0202/0204  
CIRC ACCESSION NO--AP0105608  
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105608

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SYSTEM BI-TL WAS STUDIED BY DTA UP TO A PRESSURE 20,000 KG-CM PRIME2. THE MOST INTERESTING SYSTEMS WERE THOSE CONTG. 10-52 ATOM PERCENT TL. THE EUTECTIC POINT, AT 1980 DEGREES AND 23.8 ATOM PERCENT AT NORMAL CONDITIONS IS SHIFTED IN THE DIRECTION OF HIGHER BI CONCNS. BY THE ACTION OF PRESSURE. ALL ALLOYS CONTG. 15.3-37.5 ATOM PERCENT TL AT 500 KG-CM PRIME2 SHOW SPLITTING OF THE EUTECTIC TRANSFORMATION LINES. AT 10,000 AND AT 16,000 KG-CM PRIME2, THERE ARE 2 MAX. ON THE LIQUIDUS LINE; ONE CORRESPONDS TO BI SUB2 TL WHICH BECOMES MORE DISTINCT AND REMAINS FIXED WITH INCREASING PRESSURE AND THE OTHER MAX. AT HIGHER TL CONCNS. CORRESPONDS TO A NEW INTERMEDIATE PHASE. PHASE DIAGRAMS ARE GIVEN FOR PRESSURES OF 1, 10 PRIME5, AND 1.6 TIMES 10 PRIME5 KG-CM PRIME2.

UNCLASSIFIED

USSR

UDC 669.295.017.11+669.296.017.11

APTEKAR', I. L., and PONYATOVSKIY, Ye. G.

"The Influence of Pressure on the Equilibrium Between  $\alpha$ ,  $\beta$ , and  $\omega$  Phases in Systems Based on Titanium and Zirconium"

Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting Materials — Collection of Works], Moscow, Nauka Press, 1970, pp 131-140

Translation: The thermodynamic potentials of the  $\alpha$ ,  $\beta$ , and  $\omega$  modifications of Ti and Zr are calculated. The energy, entropy, and transition volume values included in the phase equilibrium equations are assumed independent of temperature and pressure and are determined using handbook data and data on the P-T diagrams of Ti and Zr. The relationships produced satisfactorily describe the P-T diagrams of these elements.

It is demonstrated that the  $\omega$  phase in alloys of Ti and Zr is a solid solution of the alloying component in the high pressure  $\omega$  modification of Ti and Zr.

Certain possible types of stable and metastable state diagrams of metal systems based on Ti and Zr are studied in the approximation of ideal solutions, considering the  $\omega$  phase, and their evolution is traced as pressure is applied.

1/1 6 figures; 1 table; 12 biblio. refs.

Construction

USSR

UDC 624.131.537:626 82.06-15

YEVDOKIMOV, P. D., Professor, Doctor of Technical Sciences, APTEKAR', L. D.,  
Candidate of Technical Sciences and KASHKAROV, P. N., LIPOVETSKAYA, T. F.,  
and KONDRAT'YEVA, K. B., Engineers

"Experimental Studies to Determine the Stability of the Building of Nizhne-  
Kamskaya Hydroelectric Power Station"

Gidrotekhnicheskoye Stroitel'stvo, No 3, 1972, pp 11-15.

Abstract: Results are reported from field tests of the shear strength of the foundation of the Nizhne-Kamskaya hydraulic electric power station power house. Experiments on shear of stamps performed in the construction trench at the level of the structure were used as a basis for the design characteristics of foundation soil strength for the power house and to establish possible types of deformation of the foundation upon shifting of the structure under the engineering and geological conditions of the site.

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Steels

USSR

UDC 669.15-194.001.6

BABCHENKO, S. L., KARP, S. F., APTEKAR', N. M., YASHNAYA, G. V., and  
D'YACHENKO, A. Z.

"Effect of Nickel on the Impact Toughness of G13L Steel During Explosion  
Hardening"

Dnepropetrovsk, Metallurgicheskaya i Gornorudnaya Promyshlennost', No 4,  
Jul-Aug 70, pp 40-41

Abstract: A study was made of the effect of nickel additions on the impact  
toughness of G13L steel in the temperature range from +20 to -40°C after  
explosion hardening. The impact toughness of the standard metal before  
explosion hardening was 21.8 kg/cm<sup>2</sup>; the nickel-alloyed metal had an impact  
toughness of 22.7 kg/cm<sup>2</sup>. Explosion hardening produced work hardening  
through the entire thickness of the metal. The hardness reached 33-35  
RC, the reduction in thickness was up to 1 mm (initial thickness 11 mm).  
Impact toughness was significantly decreased, although G13L steel alloyed  
with nickel retains plasticity to a greater extent than steel of the  
standard composition. At -40°C, the impact toughness of the standard  
steel is sharply reduced after explosion hardening, whereas the nickel-  
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BABCHENKO, S. L., et al, Metallurgicheskaya i Gornorudnaya Promyshlennost',  
No 4, Jul-Aug 70, pp 40-41

alloyed steel shows only a slight decrease in impact toughness at this  
temperature.

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Acc. Nr: **AP0036811**

**A**

Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i  
Immunobiologii, 1970, Nr 1, pp 26-30

CULTIVATION OF SALMONELLAE OF TYPHOID FEVER  
ON SYNTHETIC NUTRIENT MEDIUM

I. M. Gruber, V. V. Biryukov, K. D. Gnuni, F. I. Aptekareva

The authors modified the full value amino acid medium by replacement of triptophane with its precursor — indol (0.1 g/l), and of asparagic acid — with urea (0.86 g/l). By the indices of reproduction the modified nutrient medium was not inferior to the initial, but was even somewhat superior to it by growth indices. Replacement of the two deficient expensive amino acids offered a possibility of cutting in two the cost of the nutrient medium.

A method of orthogonal Latin rectangles was used in this work; it offered a possibility of establishing the range of changes in the concentration of components, capable of providing the optimal rate of reproduction of typhoid bacilli, by a small number of experiments.

*D.N.*

*6*

USSR

UDC 621.313.12:538.4

APUKHTINA, YE. G., BORDACHEVA, V. V., VAL'DBERG, A. YU., VIKHROV, YE. A., KURKIN, V. P., MOSTINSKIY, I. L., NEKHOROSHEV, R. S., SOROKIN, G. S., FEDOROVA, ZH. S.

"Study of Various Methods of Trapping an Ionizing Additive in the U-02 Experimental Magnetohydrodynamic Generator"

V sb. Magnitogidrodinam. metod polucheniya elektroenergii (Magnetohydrodynamic Method of Obtaining Electric Power--collection of works), vyp. 3, Moscow, Energiya, 1972, pp 202-219 (from RZh-Aviatsionnyye i raketnyy dvigateli, otdel'-nyy vypusk, No 11, Nov 72, Abstract No 11.34.137)

Translation: The requirements on additive injection systems are formulated. Methods of trapping an ionizing additive and the structural execution are described. The operating experience using additive injection systems in experimental magnetohydrodynamic generators is described, and results are presented from studies of the efficiency of trapping them with submicron  $K_2CO_3$  dust from a flow of combustion products are presented. A study was made of the advantages and disadvantages of each of the systems. There are 7 illustrations and a 13-entry bibliography.

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1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--ASSESSMENT OF IRON DEPT IN THE ORGANISM AND DIAGNOSIS OF  
HYPOFERROUS ANEMIA -U-  
AUTHOR-(02)-APULLONGVA, L.A., IDELSON, L.I. *A*  
COUNTRY OF INFO--USSR  
SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 6, PP 41-43  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IRON, URINE, ANEMIA, DIAGNOSTIC METHODS, DIETARY MINERAL  
DEFICIENCY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1924

STEP NO--UR/0504/70/042/006/0041/0043

CIRC ACCESSION NO--AP0129273

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129273

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS EXAMED 34 WOMEN WITH HYPFERROUS ANEMIA. THE CONTENT OF IRON IN THE URINE AFTER INJECTION OF 500 MG OF DESFERAL WAS LOW (0.45 PLUS OR MINUS 0.05 MG-24H). THE NORMAL EXCRETION IS 0.94 PLUS OR MINUS 0.07 MG-24H. THE TEST IS USEFUL FOR DIFFERENTIAL DIAGNOSIS OF IRON DEFICIENCY AND ANEMIA. THE METHOD HELPS TO REVEAL LATENT IRON DEFICIENCY. FACILITY: TSENTRAL'NOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY I GRUPPA AKAD. AMN SSSR I. A. KASSIRSKOGO NA BAZE TSENTRAL'NOY KLINICHESKOY BOL'NITSY NO 2. MINISTRSTVA PUTY SOOBSHCHENIYA, MOSKVA.

UNCLASSIFIED

USSR

UDC 531.31

APYKhtIN, N. G., PIONTKOVKIY, A. A. and SAFRAY, V. M. Moscow

"On a Lyapunov Function in the Problem of the Movement of a Solid Body"

Moscow, Prikladnaya Matematika i Mekhanika Vol 37, No 2, Mar-Apr, 73, pp 346-349

Abstract: In considering the permanent rotations of a solid body attached at one point to a base, it is not possible to construct a Lyapunov function as a group of primary integrals of the equation of movement if the attachment point is somewhat moveable, because of the lack of an energy integral. This article considers another possible technique for constructing the Lyapunov function in the form of a quadratic with coefficients representing functions of time. The first step in the demonstration is the development of a single parametric family of cycles and the demonstration that if the quadratic form with constant coefficients is positive definite the family of cycles is between two constant values. It is then shown that if the derivative of this family is negative or identically zero the unperturbed motion is Lyapunov stable. The method is applied to the rotary motion of a Lagrange top.

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1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--ON THE PROBLEM OF OZONE FORMATION IN THE LOWER STRATOSPHERE -U-

AUTHOR--ARABADSHI, V.I.

COUNTRY OF INFO--USSR

SOURCE--BERLIN, ZEITSCHRIFT FUER METEOROLOGIE, VOL 21, NO 8, 1970, PP  
245-246

DATE PUBLISHED-----70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--STRATOSPHERE, ATMOSPHERIC OZONE, COSMIC RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1832

STEP NO--GE/0064/70/021/008/0245/0246

CIRC ACCESSION NO--AP0120509

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120509

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS BRIEF REPORT STATES THAT THE AUTHOR BELIEVES THAT THE MAIN CAUSE OF OZONE FORMATION IN THE LOWER STRATOSPHERE IS THE ABSORPTION OF COSMIC RADIATION BY THE ATMOSPHERE. ACCORDING TO THIS THEORY THE ENERGY FOR THE FORMATION OF OZONE IS CREATED BY A NUCLEAR CLEAVAGE OF XENON. THE THEORY IS IN AGREEMENT WITH THE BASIC CHARACTERISTICS OF OZONE IN THE LOWER STRATOSPHERE, AND IS THEREFORE CONSIDERED PREFERABLE TO THE PHOTOCHEMICAL THEORY PRESENTLY HELD. THREE REFERENCES TO RUSSIAN PUBLICATIONS.

UNCLASSIFIED

USSR

UDC: 621.652:669.018.95(088.8)

ARABEY, B. G., BAULIN, Yu. N., ZVEREV, I. I., ZUKHER, M. S., KOKONIN, S. S.,  
MARKOV, Yu. M., PORTNOY, K. I., SKLYAROV, N. M., TYURIN, V. A.

"Metal Ceramic Friction Material"

USSR Author's Certificate Number 346373, Filed 15/12/69, Published 18/08/72  
(Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No  
8G422P, by S. Krivonosova).

Translation: A metal ceramic friction material, for example for braking  
devices, is suggested, containing ZrC and B carbide. In order to increase  
the stability of the coefficient of friction, B nitride and metals of the Fe  
group are introduced to the composition, taken in any combination with the  
following ratio of components (in wt. %): B carbide -- 10-50, Fe-group metals,  
taken in any combination, 3-35, B nitride 1-5, ZrC -- remainder. The material  
suggested has the following properties: s. g. 5.52 g/cm<sup>3</sup>; coefficient of  
friction at braking temperature 600° 0.50-0.55, at 800° 0.45-0.50; stability  
of coefficient of friction with specific braking energies 450 kgm/cm<sup>2</sup> 0.75-  
0.88; at 923 kgm/cm<sup>2</sup> 0.80-0.95; wear with specific braking energies of 450  
and 923 kgm/cm<sup>2</sup>, in  $\mu$ /tori 2-6 and 6-11 respectively; permissible volumetric

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USSR

Arabey, B. G., Baulin, Yu. N., Zverev, I. I., Zukher, M. S., Kokonin, S. S., Markov, Yu. M., Portnoy, K. I., Sklyarov, N. M., Tyurin, V. A., USSR Author's Certificate Number 346373, Filed 15/12/69, Published 18/08/72.

temperature 800°, heat conductivity factor in  $\text{t/m}^\circ$  at 100° 48.1, 200° 44.0, 400° 35.9, 600° 29.5, 800° 27.3, 1000° 26.4; specific heat capacity (in  $\text{cal/g}^\circ$ ) at 100° 0.134, 200° 0.136, 400° 0.150, 600° 0.161, 800° 0.169, 1000° 0.184; tensile strength at 20° 36  $\text{kg/mm}^2$ ; bending strength at 20° 62  $\text{kg/mm}^2$ ; shear strength at 20° 13.8  $\text{kg/mm}^2$ ;  $a_H$  0.15  $\text{kgm/cm}^2$ .

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ARABEY, B.G.

TESTS OF SAMPLES OF ABSORBING ELEMENTS OF FAST POWER  
REACTORS IN THE BR-5 REACTOR

Paper by V.D. Alifanov, V.I. Matveyev, B.G. Arabey, R.M. Voznesenskiy and N.Ye. Golubitskiy, Physics-Engineering Institute, Obninsk; Dimitrograd, Prolucheniyeushchivye materialy, sterzhni reguliruyemye bystrykh reaktorov (Absorbing materials and control rods for fast reactors). International Working Group for Fast Reactors Specialists Meeting, Russian, Dimitrograd, 4-8 June, 1973)

In this work the results of radiation investigations of experimental specimens of PBL (absorbing elements) irradiated in the BR-5 fast reactor are given. Absorbing materials based on boron were investigated, and also metallic tantalum and various structures of PBL, hermetically sealed and non-hermetically sealed. Irradiation was conducted in a special cassette, located at the edge of the reactor core, and the general integral flux of irradiation by fast neutrons amounted to  $3 \times 10^{21}$  n/cm<sup>2</sup>, which corresponds to burn-up in boron-containing materials of 0.2 atomic percent of boron. In the work the basic results are given with respect to gas liberation, swelling and the structure of the irradiated materials, and also data on the physical and thermophysical radiation regime.

Introduction

Control units are one of the most important elements of the design of a reactor. Their development is associated with the performance of various experimental investigations, including radiation tests giving the most complete information concerning the efficiency of one design or material or other.

In spite of our great experience in the designing of control units for thermal reactors, and the large quantity of

USSR

UDC 389.6.539.125.5.07:621.039.564.2

ARABEY, B. G., BOCHIN, V. P., GARAPOV, E. F., LOMAKIN, S. S., PETROV, V. I.,  
SAMOYLOV, P. S., KHEYZOV, V. V.

"Standardization of Measurements of Neutron Flux Density in Nuclear Reactors"

Tr. Soyuz. NII Priborostr. [Works of Union Scientific Research Institute  
for Instrument Building], 1972, No 17, pp 3-8, (Translated from Referativnyy  
Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 7, 1972, Abstract No  
7.32.1364, from the Resume).

Translation: Problems of standardization of means and methods of measure-  
ment of neutron field parameters in nuclear reactors in order to provide  
unity and correctness of measurement of these parameters are discussed.  
One means of standardization is the use of activation detectors. Recommen-  
dations are presented for the composition of standard sets of activation  
detectors. It is suggested that a "standard" source of thermal neutrons  
based on the F-1 graphite reactor be used to calibrate detectors used for  
continuous measurements in reactors. The parameters of the neutron field  
in the reactor (arbitrary flux density, epithermal parameter, neutron  
gas temperature) are measured using activation detectors with errors of  
2.5-3%. The use of the source described can allow calibration of neutron  
detectors with an accuracy of 4-7%.

1/1

ARABKINA, A.

MARCH WEATHER FORECAST FOR KAZAKHSTAN

[Article by A. Arabkina, Senior Weather Forecasting Engineer, Kazakh Scientific-Research Hydrometeorological Institute: "Meeting Spring"; Alma-Ata, Kazakhstanskaya Pravda, Russian, 5 March 1972, p. 4]

March is the time of Spring's impetuous onset over a large part of the territory of the Republic. The sun rises ever higher over the horizon, and the length of the day increases rapidly. The equinox will take place on 21 March.

Spring in Kazakhstan spreads over its territory from south to north. By the beginning of the month the average daily temperature of the air in the extreme south is already above zero. The snow cover recedes. The ground dries rapidly. By the second ten-day period in March, the average daily air temperature in the south of Chirchenskaya Oblast already stays above 5°C; by the end of the month it goes above +10°C, which corresponds to the beginning of active vegetation.

Spring begins in the central parts of the Republic two ten-day periods later.

March may be considered a winter month in North Kazakhstan since the average air temperature stays here below zero and the snow cover is still retained.

In March of this year the average daily temperature in the north of the Republic is expected to be minus 5-12°C and in the south plus 3-8°C. Such a temperature is below normal by 1-2 degrees in the western regions and above normal by 1-2 degrees in the eastern half of the territory of Kazakhstan. It should be normal for the other regions.

In the south of the Republic precipitation will be in the form of rain and snow, with glazed frost in places. The wind should be westerly, 7-10 meters per second, reaching 21 meters at times.

SPRS 55677

11 April 72

- 18 -

Densest air temperature is anticipated for the north half of the territory on 6-7 March (at night minus 20-25°C, in places 10°), on 12-14 and 20-27 March (at night minus 18-23°). The temperature should rise in the beginning of March (during the day from minus 5° plus 2°), on 8-11, 16-19, and 28-30 March (by day from -3° to plus 5°C). In the southern half of the Republic's territory, the temperature became higher on 7-10 March (at night minus 5-13°), on 14-15, 22-24 March (at night minus 3-10°). It will be warm on 11-13 March (by day plus 5-12°), on 16-20 March (by day plus 10-18°), and on 26-31 March (by day plus 15-23°C).

7697  
CSOI 1824-M

Veterinary Medicine

USSR

BOLOTSKIY, I. A., Candidate of Veterinary Sciences; CHULOVSKIY, I. K., Senior Scientific Associate, and ARABYAN, A. M., Krasnodar Scientific Research Veterinary Station, Omsk Scientific Research Institute of Infections with Natural Foci, Ministry of Health RSFSR, and Georgian Zooveterinary Teaching Research Institute

"The Epizootiology of Leptospirosis"

Moscow, Veterinariya, No 2, 1971, pp 65-68

Abstract: Leptospirosis in Krasnodar kray is most severe among cattle, and is usually caused by *L. hebdomadis*, although antibodies to *L. saxkoebing*, *L. wolffi*, *L. hardjo* and *L. sejroe* are also frequently recorded. Nearly half of the murine rodents trapped in farms and forests of this area had antibodies to various serotypes of *Leptospira*. Epidemiological survey of animals in Western Siberia using the microagglutination and lysis test showed infection of pigs, horses, deer, yaks and narals with 11 types of *Leptospira*. The disease can occur at any time of year, but is most common from April to October. The most common serotypes of *Leptospira* in Cruzinskoy SSR are *L. tarassovi*, *L. pomona*, and *L. icterohaemorrhagiae*.

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1/2 035 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--ADDITIVE FOR AN INTERNAL COMBUSTION ENGINE FUEL -U-  
AUTHOR--(05)-SANIN, P.I., ARABYAN, S.G., SHER, V.V., KHOLOMONOV, I.A.,  
GORDASH, YU.T.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 266,457  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--17MAR70  
SUBJECT AREAS--PROPULSION AND FUELS  
TOPIC TAGS--CHEMICAL PATENT, CARBOXYLIC ACID, ESTER, KETONE, ACETYLENE,  
MINERAL OIL, FUEL ADDITIVE, INTERNAL COMBUSTION ENGINE, ORGANOALUMINUM  
COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3005/0879 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0132969  
UNCLASSIFIED

2/2 035 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AA0132969  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE ADDITIVE CONSISTS OF  
16-25PERCENT POLYALUMINOXANES AND CARBOXYLIC ACID ESTERS AND 1-5PERCENT  
BETA DIKETONE, E.G. ACETYLACETONE, OR BETA KETO ACID ESTER, E.G.  
ACETOACETIC ESTER, IN MINERAL OIL. FACILITY: TOPCHIEV, A. V.,  
INSTITUTE OF PETROCHEMICAL SYNTHESIS. FACILITY: STATE UNION  
SCIENTIFIC RESEARCH TRACTOR INSTITUTE.

UNCLASSIFIED

USSR

UDC 691.327.002.612

ARADOVSKIY, YA. L., Candidate of Technical Sciences, TER-OSIPYANTS, R. G.,  
Candidate of Technical Sciences, and ARADOVSKAYA, E. M., Engineer

"Properties of Concrete with Magnetically Treated Water"

Moscow, Beton i Zhelezobeton, No 4, Apr 72, pp 32-34

Abstract; Results of scientific research works of the use of magnetically treated water in the production of heavy concretes and heavy concrete articles are reported. Experimental investigations of the Tashkent Zonal Scientific Research Institute for Power Supply and of the Trust of the State Institute for the Introduction of Advanced Technological Operational and Labor Methods in Construction (of the Main Administration for the Construction of Industrial Establishments in the Tashkent Region) revealed that one of the main characteristics of concrete mix prepared on magnetically treated water is its decreased vibration strength. From mathematical processing of experimental data, a formula for the additional growth of the concrete strength with magnetically treated water, depending on the composition of the mix, was developed. The change of rheological indices of concrete mixes, expressed in the decreased vibration viscosity of the mix with magnetically treated water, was established. Data of the optimum method of water treatment are given and

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- 73 -

USSR

ARADOVSKIY, YA. L., et al., Beton i Zhelezobeton, No 4, Apr 72, pp 32-34

results of the change in the plastification strength of the wet concrete mix by reagent and reagentless processing methods are discussed. The physico-mechanical properties of concretes on magnet treated water are shown. Three illustrations, three tables, three biblio, refs.

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USSR

UDC 691.327.002.612

ARADOVSKIY, YA. L., Candidate of Technical Sciences, TER-OSIPYANTS, R. G.,  
Candidate of Technical Sciences, and ARADOVSKAYA, E. M., Engineer

"Properties of Concrete with Magnetically Treated Water"

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Abstract; Results of scientific research works of the use of magnetically treated water in the production of heavy concretes and heavy concrete articles are reported. Experimental investigations of the Tashkent Zonal Scientific Research Institute for Power Supply and of the Trust of the State Institute for the Introduction of Advanced Technological Operational and Labor Methods in Construction (of the Main Administration for the Construction of Industrial Establishments in the Tashkent Region) revealed that one of the main characteristics of concrete mix prepared on magnetically treated water is its decreased vibration strength. From mathematical processing of experimental data, a formula for the additional growth of the concrete strength with magnetically treated water, depending on the composition of the mix, was developed. The change of rheological indices of concrete mixes, expressed in the decreased vibration viscosity of the mix with magnetically treated water, was established. Data of the optimum method of water treatment are given and

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USSR

ARADOWSKIY, YA. L., et al., Beton i Zhelezobeton, No 4, Apr 72, pp 32-34

results of the change in the plastification strength of the wet concrete mix by reagent and reagentless processing methods are discussed. The physico-mechanical properties of concretes on magnet treated water are shown. Three illustrations, three tables, three biblio. refs.

2/2

Acc. Nr:

AP0053361

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

UR0228

✓ 103404a Gypsum-pozzolan cement-based additives for regulating the properties of concretes. Stambulko, V. I.; Aradovskii, Ya. L. (USSR). *Stroit. Mater.* 1970, (2), 24-5 (Russ). Heat-liberation curves can be used to det. the amt. of retardant or complex additive required to control the start of setting and establish intensity of strength growth as a function of the type and amt. of additives. Delay in start of setting up to 30 min is achieved by adding 0.2% keratin retardant or 0.4% glue-line and use of electrolytes  $\text{CaCl}_2$ ,  $\text{NaCl}$ , and  $\text{KCl}$  gives increase in crushing strength by 10-30% during all periods of hardening.  $\text{KCl}$  gives the largest increase in strength during 1st hr and  $\text{CaCl}_2$  for 28 days.

B. Z. Kamich

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REEL/FRAME

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USSR

UDC 577.1:615.7/9

BABAYAN, E. A., CHALABYAN, Zh. A., and ARAGATSUNI, A. V.

"Nucleotide Composition of RNA in the Organs of Experimental Animals Subjected to Inoculation with Flotation Agent OPSB [oxidized propylenebutanol]"

Tr. Klinich. otdl. NII gigiyeny truda i profzabolebaniy (Transactions of the Clinical Department of the Scientific Research Institute of Work Hygiene and Occupational Diseases), No 1, 1970, pp 120-123 (from RZh-30F. Biologicheskaya Khimiya, No 11, Jun 71, Abstract No 11F2079)

Translation: Five mg/kg of OPSB was daily administered orally to rats for a period of 4.5 months. A decrease was discovered in the RNA content in cerebral tissue (29.9%) and liver (13%); in addition, the uracyl content in the brain dropped (27.5%) and the guanine content increased (25.8%); in the liver, the cytosine content dropped (14.2%) and the adenine content increased (18.8%)

D. G.

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USSR

ARAK, T. V. and NEVZOROV, V. B.

"Certain Estimates for the Maximum of Sequential Sums of Independent Random Quantities"

Teoriya Veroyatnostey i yeye Primeneniya [The Theory of Probabilities and Its Applications], 1973, Vol 18, No 2, pp 402-405 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V30)

Translation: Suppose  $S_n = \sum_{k=1}^n X_k$ ,  $\bar{S}_n = \max_{1 \leq k \leq n} S_k$ ;  $B_n^2 = \sum_{k=1}^n D X_k$ ,

$$G(x) = \begin{cases} \sqrt{\frac{2}{\pi}} \int_0^x e^{-t^2/2} dt & (x \geq 0) \\ 0 & (x < 0) \end{cases}$$

$$L_{n,p} = \frac{\sum_{k=1}^n E|X_k|^p}{B_n^p} \quad (p \geq 2).$$

This work constructs a sequence of independent symmetrical random quantities  $\{X_n\}$ , for which the relationship

$$\sup_x |P\{\bar{S}_n < x B_n\} - G(x)| = o\left(L_{n,p}^{-1/p}\right)$$

is not fulfilled.

Author's view

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USSR

UDC 621.375.4.087.9.083.6 2

OSTAPENKO, G. S., ZOLOTAREV, T. V., PETROV, L. N., UDOVIK, A. N., ARAKCHYEVA, I. A., TOROPOV, A. D.

"Instability Coefficients of the Feed Parameters of the Transistors of Monolithic Differential Amplifiers"

Sb. tr. Voronezh. politekhn. in-ta (Collected Works of the Voronezh Polytechnic Institute), 1969, vyp. 2, pp 127-135 (from RZh-Radiotekhnika, No 5, May 72, Abstract No 5D114)

Translation: A study is made of the parameters of monolithic transistors as a function of the parameters of their feed conditions. For the differential amplifier in the monolithic execution, relations are derived by means of which it is possible to define the instability coefficient of the feed parameters. It is demonstrated that these parameters are depicted most conveniently in the form of linear graphs. On the basis of the qualitative analysis of the instabilities, conditions were discovered under which the instability coefficient is minimal. There are 3 illustrations and a 4-entry bibliography.

1/1

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USSR

UDC 621.375.4:621.375.121

ZOLOTAREV, T. V., OSTAPENKO, G. S., PETROV, L. N., UDOVIK, A. P., ARAKCHEYEVA, I. A.

"Problem of the Effect of the Capacitances of an Integrated Transistor on the Pass Band"

Sb. tr. Voronezh. politekhn. in-ta (Collected Works of Voronezh Polytechnic Institute), 1969, vyp. 2, pp 104-110 (from RZh-Radiotekhnika, No 5, May 72, Abstract No 5D109)

Translation: A study is made of the effect of the capacitances of the junctions and substrates of an integrated transistor on the pass band of the high frequency active elements. It is demonstrated that the capacitance of the emitter junction and also the capacitance of the substrate must be calculated by the relation for sharp junctions. It is recommended that transistors with minimal p-n-junctions be selected as the optimal transistors for wide band integrated amplifiers or dielectric insulation of the components be used in place of them, which sharply reduces the stray capacitances. There are 2 illustrations and a 2-entry bibliography.

1/1

USSR

UDC 621.375.018.756

ARAKCHEYEVA, I. A., DOMIN, L. P., YEREMIN, S. A., NIKISHIN, V. I., OSTAPENKO, G. S., PETROV, L. N., TKACHEV, A. I., UDOVIK, A. P.

"A Differential Amplifier"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztzy, Tovarnyye Znaki, No 4, Feb 72, Author's Certificate No 326704, Division H, filed 19 Jan 70, published 19 Jan 72, p 208

Translation: This Author's Certificate introduces a differential amplifier which contains two emitter-followers, two amplification stages with dynamic load and a common source of direct current. As a distinguishing feature of the patent, the amplification factor is increased and the thermal compensation is improved by basing the dynamic load on a reverse conductivity transistor, and by connecting in each branch of the amplifier a transistor of the same conductivity as that of the amplification stage, and a diode biased in the forward direction. The emitter of the amplification stage is connected to the DC source and to the emitter of the transistor with the same conductivity. The base of this transistor is connected through a diode to the centertap of the supply source, and the collector is connected to the base of the dynamic load transistor.

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USSR

UDC: 621.396.6-181.5

ZOLOTOREV, T. V., OSTAPENKO, G. S., PETROV, L. N., UDOVIK, A. P.,  
ARAKCHEYEVA, I. A., NIKISHIN, V. I., and ALEKSENO, A. G.

"Effect of Distributed Capacitance and Geometric Dimensions of  
Monolithic Circuit Resistors on Their Frequency Characteristics"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 13, No. 10, pp 1272-1275

Abstract: This brief communication deals with parasitic effects in integrated circuits manufactured by the planar-epitaxial process, with the elements separated by p-n junctions. The resistors in such a circuit are inserted by diffusion methods; and are thus especially subject to parasitic elements including a distributed transistor and distributed capacitances of p-n junctions. As proof, the cross section of an integrated circuit with its diffusion resistor is shown, and with it the equivalent circuit. From this circuit, the authors conclude that the frequency effect of the resistor is inversely proportional to the width of the resistor -- at least up to the practical limit of resistor width, which is about 10  $\mu$ . Nomograms are shown which can be used for determining the geometric dimensions and limiting frequency of the monolithic resistors from the known resistance values, or the reverse. A plot of the frequency characteristics of two monolithic resistors is also given.

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USSR

UDC 541.69+543.422.8

AVOYAN, R. L., ARAKELOVA, E. R., AVETISYAN, A. A., and ARUTYUNYAN, E. G.,  
Institute of Fine Organic Chemistry Imeni A. L. Madzhoyan, Acad. Sc. Armenian  
SSR (Yerevan)

"Conformation and Physiological Activity of Molecules. I. Roentgenographic  
Study of the  $\gamma$ -Diethylaminopropyl Ester Hydrobromide of  $\alpha$ -Ethoxydiphenyl-  
acetic Acid"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 25, No 8, 1972, pp 702-709

Abstract: A total X-ray structural analysis has been carried out on the hydro-  
bromide of  $\gamma$ -diethylaminopropyl ester of  $\alpha$ -ethoxydiphenylacetic acid -- an  
analog of the medicinal preparation etpenal with both the nicotino- and mus-  
caryolytic activity. On the basis of three dimensional series of Petterson and  
Fourier analysis and by the method of least squares up to  $R = 0.165$  the  
crystalline structure was determined. The elementary cell is monoclinic with  
following parameters:  $a = 19.87$ ,  $b = 7.71$ ,  $c = 16.78$ ,  $\beta = 114.5^\circ$ ,  $N = 4$  (coordi-  
nation number  $P_{21}$ ). The number of independent non-zero reflections is 640.

The coordination of the N-atom is represented by a "deformed" tetrahedron, three  
sites being occupied by carbon atoms  $C_{19}$ ,  $C_{20}$ , and  $C_{22}$ , the fourth -- by the  
hydrogen atom of the  $N-H \cdots Br$  hydrogen bond. The  $H \cdots Br$  distance is  $3.44 \text{ \AA}$ .  
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USSR

UDC 539.26 + 547.466

AVOYAN, R. L., ARAKELOVA, E. R., and ARUTYUNYAN, E. G., Institute of Fine Organic Chemistry Imeni A. L. Madzhoyan, Academy of Sciences Armenian SSR, (Yerevan)

"Conformation and Physiological Activity of Molecules. VI X-ray Structural Analysis of the  $\gamma$ -Diethylaminopropyl  $\alpha$ -Diphenylacetate Hydrobromide"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 26, No 9, 1973, pp 713-719

Abstract: A complete x-ray structural analysis of the title compound has been carried out. Its crystals are monoclinic. The parameters of the unit cell are found to be:  $a = 17.26$ ,  $b = 7.43$ ,  $c = 17.45$  Å,  $\beta = 110.5^\circ$ ,  $N = 4$ , space group  $P2_1/c$ . The structure has been determined by the heavy atom method using the least square calculations up to  $R = 0.197$ . The nitrogen atom is attached to bromine through a  $3.38$  Å hydrogen bonding. The physiological activity characteristic of the title compound is discussed by comparing its structural relationship with those of acetylcholine and L(+)muscarine.

- END -

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GSO: 1841-W

ARAKELOVA, E.R.

JPRS 59108

23 May 1973

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UMC 577-31577.23

ON THE MOLECULAR MECHANISM OF ACTION OF ORGANIC AGENTS ON CHOLINERGIC RECEPTORS

[Article by R. L. Abovyan, A. A. Arakelova, and E. R. Arakelova, Institute of Fine Organic Chemistry (Imeni A. L. Nudzhumyan, Academy of Sciences of the Armenian SSR; Yerevan, Biologicheskii Zhurnal Armenii, Russian, Vol 25, No 4, April 1972, pp 11-19)]

One of the fundamental mediators of nervous activity is acetylcholine (ACh). The substitution of a methylene group for the ester oxygen on ACh is virtually without effect on the nicotinic activity of ACh [13], but decreases the muscarinic activity by two orders of magnitude [18]. When the carbonyl group is replaced by a methylene group, the nicotinic activity falls 42-fold (frog rectus abdominis muscle test [13]), and the muscarinic activity decreases 10-fold (guinea pig intestine test [18]). This indicates that the ester oxygen is required for the muscarinic but not the nicotinic activity of ACh, and that the carbonyl group is necessary for both types of activities.

Structural studies of ACh [15], muscarine [20], and analogous compounds [24] have shown that in the crystalline form they possess a somewhat "unusual" structure (Fig. 1). Their common CQCNC system has a gauche conformation, which is usually interpreted in terms of ion-dipole interactions [24], or a C1-H...O1 hydrogen bond [15].

The muscarinic and nicotinic properties of ACh are explained on the basis that ACh exists in two molecular forms in the organism [24], one of which has a "muscarinic" (ring configuration) and the other a "nicotinic" (extended configuration) structure, and two types of cholinergic receptors (CR) -- one muscarinic and the other nicotinic.

In the present communication a nicotinic CR of the skeletal muscle is regarded as representing an "antimolecule" that is corrective, or practically so, with crystalline ACh [15], but with inverse disposition of density charge; the cationic head of ACh corresponds to an anionic region on CR, and the ester portion of ACh to an electrophilic region of CR. In this connection one necessary factor must be duly considered, and

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USSR

UDC 019.941(05)

GOR'KOVA, V.I.. MELLION, S.P.. ZAYTSEVA, M.A., ARAKELOVA, L.V., KASPAROVA, V.G., GODUNOVA, L.I., and KASPAROVA, S.G.

"A System for Analyzing a Documental Information Flow Consisting of Scientific Journals"

Moscow, Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, Organizatsiya i Metodika Informatsionnoy Raboty, No. 4, 1971, pp 5-9

Abstract: Due partly to great irregularities in the reception of source documents by VINITI [Vsesoyuznyy Institut Nauchnoy i Tekhnicheskoy Informatsii; All-Union Institute of Scientific and Technical Information], there is a delay between the appearance of an original scientific work and VINITI's publication of an abstract of it in the appropriate Referativnyy Zhurnal (an average of 2.0-2.4 months for abstracting and editing and 1.1 month for processing are required). A study revealed that this delay could be reduced if specialized scientific journals were received directly by the editor of the appropriate abstract journal, without the usual preliminary sorting and processing. In order to carry out this study, a system for analyzing primary sources of

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USSR

UDC 019.941(05)

GOR'KOVA. V.I., MELLION, S.P., et al., Moscow, Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, Organizatsiya i Metodika Informatsionnoy Raboty, No. 4, 1971, pp 5-9

information -- periodic and continuing publications -- was developed and introduced. It enabled the researchers to rank the totality of source journals in descending order of frequency of inclusion of articles from them in the abstract journal for a specific field. From this ranking, a list of the most frequently used journals was obtained for the given abstract journal.

The system for analyzing primary sources, which utilized punchcard processing equipment, the Gamma-10 machine, and a Minsk-22 computer, proved to have great potentialities for the improvement of VINITI's system of information servicing and for the development of the theoretical foundations of systems and structural analysis of information flows.

Although this research was concerned with documental information flows consisting of scientific journals, analogous investigations could be carried out for patent literature and literature of other types.

2/2

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USSR

UDC: 621.371:551.510.52

ARAKELYAN, K. A., TRUBNIKOV, B. N.

"Some Problems of the Formation of Radiation in the Submillimeter Wave Band in the Earth's Atmosphere"

V sb. Radioelektronika optich. diapazona (Radio Electronics in the Optical Band--collection of works), Moscow, 1970(1971), pp 73-86 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A225)

Translation: The paper discusses general problems of spectroscopy in the submillimeter wave band, and the nature of absorption of various spectral components of emission during passage through the atmosphere. Six tables, bibliography of 45 titles. N. S.

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USSR

UDC: 621.371:551.510.52

ARAKELIAN, K. A.

"On Propagation of Radio Waves in the Submillimeter Band in the Atmosphere"

V sb. Radioelektronika optich. diapazona (Radio Electronics in the Optical Band--collection of works), Moscow, 1970(1971), pp 91-94 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A226)

Translation: The author analyzes propagation of submillimeter waves in the atmosphere as a function of vertical air currents. Equations are derived for the intensity of emission directed downward and for emission directed upward; these equations are used to find an expression for the effective monochromatic radiation flux as measured by instruments. Bibliography of one titles. N. S.

1/1

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USSR

UDC: 621.371:538.569.4

~~ABAKELIAN, K. A.~~, TRUBNIKOV, B. N.

"Absorption of Radio Waves in the Submillimeter Band by Atmospheric Water Vapor"

V sb. Radioelektronika optich. diapazona (Radio Electronics in the Optical Band--collection of works), Moscow, 1970(1971), pp 86-91 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A219)

Translation: Experimental data on absorption of submillimeter waves in the atmosphere are analyzed. It is noted that the absorption spectrum contains strong bands caused by rotation of water vapor molecules, and transparency windows. It is shown how the absorption spectra of submillimeter waves can be used for determining the condition of various layers of the atmosphere. Four tables, bibliography of sixteen titles. N. S.

1/1

1/2 015 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--ON THE STATISTICS OF FLARE STARS IN THE SOLAR VICINITY -U-  
AUTHOR--ARAKELYAN, M.A. A  
COUNTRY OF INFO--USSR  
SOURCE--SOOBSHCHENIYA BYURAKANSKOY OBSERVATORII AKADEMIYA NAUK ARMYANSKOY  
SSR, 1970, NR 41, PP 56-68  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS  
TOPIC TAGS--DWARF STAR, HYDROGEN, STELLAR RADIATION, STELLAR SYSTEM  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1994/0077 STEP NO--UR/2620/70/000/041/0056/0068  
CIRC ACCESSION NO--AP0114473  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0114473

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LUMINOSITY FUNCTIONS OF DWARFS WITH HYDROGEN EMISSION AND FLARE STARS IN THE SOLAR VICINITY ARE DETERMINED. THE NUMBER OF FLARE STARS BRIGHTER THAN  $M_{\text{SUBV}}$  EQUALS 17 PRIMEN IN SOME SOLID ANGLE WITH ITS SUMMIT IN THE SUN IS ESTIMATED PROVIDED THAT THE DENSITY OF THESE STARS IS CONSTANT UP TO SUFFICIENTLY LARGE DISTANCES. THE COMPARISON OF THE DATA OBTAINED WITH THE RESULTS OF OBSERVATIONS SHOWS THAT THE EXCESS OF FLARE STARS EXISTS IN THE SOLAR VICINITY. THE SUGGESTION IS MADE THAT THIS EXCESS IS DUE TO MEMBERS OF SOME STELLAR ASSOCIATION WHICH ONCE EXISTED IN THE REGION WHERE AT PRESENT THE SUN IS LOCATED.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--REPRODUCTION OF BASIC FUNDS IN THE USSR -U-  
AUTHOR--(04)-ARAKELYAN, A.A., VOROTILOV, V.A., KANTOR, L.M., PAVLOV, P.M.  
COUNTRY OF INFO--USSR  
SOURCE--REPRODUCTION OF BASIC FUNDS IN THE USSR (VOSPROIZVODSTVO OSNOVNYKH  
FUNDOV V SSSR) MOSCOW, MYSL', 1970, 484 PP  
DATE PUBLISHED-----70  
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES  
TOPIC TAGS--INDUSTRIAL MANAGEMENT, FINANCE, ECONOMIC SYSTEM CAPITAL  
INVESTMENT, INDUSTRIAL DEVELOPMENT, S AND T DEVELOPMENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/0051 STEP NO--UR/0000/70/000/000/0001/0484  
CIRC ACCESSION NO--AM0123832  
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AM0123832

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: CHAPTER I  
ECONOMIC NATURE OF BASIC INDUSTRIAL FUNDS 3. II STRUCTURE OF BASIC  
FUNDS 43. III BRANCH STRUCTURE OF BASIC FUNDS 58. IV INDICES OF  
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PROBLEMS IN REPRODUCTION OF BASIC INDUSTRIAL FUNDS OF SOCIALIST NATIONAL  
ECONOMY.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--WEAR RESISTANCE OF SINTERED METAL CONSTRUCTION MATERIALS SUBJECTED  
TO DRY FRICTION -U-  
AUTHOR-(04)-TITARENKO, S.V., ARAKELYAN, N.A., RADOMYSELSKIY, I.D.,  
POLOTAY, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--PURGSHKOVAYA MET., FEB. 1970, (2), 80-84  
DATE PUBLISHED----FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHROMIUM STEEL, WEAR RESISTANT SINTERED ALLOY, BALL BEARING  
STEEL, ANTIFRICTION MATERIAL, CARBON STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/0123

STEP NO--UR/0226/70/000/002/0030/0084

CIRC ACCESSION NO--AP0123895

UNCLASSIFIED

2/2 021  
CIRC ACCESSION NO--AP0123895

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FRICTION AND WEAR CHARACTERISTICS OF A NUMBER OF CR AND C STEEL SINTERED PARTS WERE STUDIED AND COMPARED WITH THE CORRESPONDING CHARACTERISTICS OF CONVENTIONAL BALL BEARING STEEL PARED WITH A HIGH SPEED CUTTING STEEL UNDER CONDITIONS OF DRY FRICTION. THE COEFF. OF FRICTION FELL AND THE WEAR INCREASED WITH INCREASING SLIP VELOCITY IN EVERY CASE; HOWEVER, THE SINTERED CR STEEL YIELDED THE HIGHEST DEGREE OF WEAR RESISTANCE. UP TO A CERTAIN LIMIT, THE ANTI FRICTION PROPERTIES OF THE SINTERED STEELS INCREASED WITH INCREASING C CONTENT.

UNCLASSIFIED

USSR

UDC 669.71.053.4.067

VOLKOVA, N. S., ARAKELYAN, O. I.

"Interaction of Magnesium Oxide with Aluminate Solution"

Tr. Vses. n.-i. i provektn. in-ta alyumin., magn. i elektrodn. prom-sti  
(Works of the All-Union Scientific Research and Planning and Design Institute  
of Aluminum, Magnesium and Electrode Industry), 1970, No 70, pp 157-160 (from  
RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G149)

Translation: MgO obtained by annealing the basic Mg carbonate at 500, 700, and 900° for 2 hours in the amount of 5 grams/liter is used to remove Si from solutions. The experimental conditions were the following: temperature 98°, duration 26-78 hours. For purposes of identification of the phase composition of the solid phases, various experiments were performed with respect to interaction of MgO with water, a NaOH solution with a concentration of 81 grams/liter of Na<sub>2</sub>O, and aluminate-alkaline solutions containing 82-90 grams/liter of Al<sub>2</sub>O<sub>3</sub> with a causticity of 1.5-1.7. The chemical composition of the phases obtained demonstrated that during interaction with water and NaOH, Mg(OH)<sub>2</sub> is formed, and during interaction with aluminate-alkaline solution,  
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USSR

VOLKOVA, N. S., et al., Tr. Vses. n.-i. i proyekt. in-ta alumin., magn. i elektrod. prom-sti, 1970, No 70, pp 157-160

a new phase with a stoichiometric composition  $4\text{MgO} \cdot \text{Al}_2\text{O}_3 \cdot 11\text{H}_2\text{O}$ . The results of crystal-optical studies of the precipitates demonstrated that  $\text{Mg}(\text{OH})_2$  is represented by cryptocrystalline aggregates and narrow-prismatic grains with an index of refraction of 1.560. The new phase is represented by small-grain isotropic aggregates with an index of refraction of 1.530-1.545. The x-ray of the compound  $4\text{MgO} \cdot \text{Al}_2\text{O}_3 \cdot 11\text{H}_2\text{O}$  is characterized by the strongest lines 7.68, 3.78, and 2.56. There are 2 tables.

2/2

- 80 -

USSR

UDC 669.721.472

KLYUCHNIKOVA, Ye. F., ARAKELYAN, O. I.

"Study of the Phase Composition of Impurities in Products of Magnesium Production"

Tr. Vses. N-i. i Proyechn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 72, pp. 139-143. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G199 by the authors).

Translation: Results are presented from determination of the phase composition of impurities in various plant products from the production of Mg. Optical crystal analysis precisely determines the "transient states" of MgO as a gradual change in the index of refraction between 1.690 and 1.736, whereas the lattices of all these states correspond to periclase. Crystallo-optical characteristics of impurities and their diagnosis are presented. 5 figs; 6 biblio refs.

1/1

USSR

ARAKELYAN, S. G. and ZAKHARYAN, ZH. V., Yerevan Polytechnical Institute imeni K. Marx

"A Possibility for Testing Models of Buildings"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR. Seriya Tekhnicheskikh Nauk, Vol 25, No 5, 1972, pp 51-52

Abstract: In the designing of high-rise buildings of up to 20 stories in seismic regions, account must be taken of the first three forms of oscillation. It is proposed that several simultaneously acting vibration machines be used in testing models of such buildings. 1 figure. 1 reference.

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1/2 061 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--CLARIFICATION AND DISINTEGRATION OF GASEOUS BORON TRICHLORIDE (BCL  
SUB3) BY RADIATION OF A CO SUB2 LASER -U-  
AUTHOR--(05)-ARAKELYAN, V.S., KARLOV, N.V., KUZMIN, N.V., PETROV, YU.N.,  
STELMAKH, O.M. A  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, NO 3, MAR 70, PP 634-635  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--LASER EXCITATION, CARBON DIOXIDE LASER, BORON FLUORIDE,  
ABSORPTION COEFFICIENT, RESONANCE ABSORPTION, GAS DISSOCIATION, GAS  
PRESSURE, RADIATION INTENSITY/(U)IKS21 SPECTROPHOTOMETER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1987/1461 STEP NO--UR/0109/70/000/003/0634/0635  
CIRC ACCESSION NO--AP0104757  
UNCLASSIFIED

2/2 061

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0104757

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER DISCUSSES THE RESULTS OF EXPERIMENTS CONCERNED WITH A DETERMINATION OF THE SATURATION FACTOR AND LIFE TIME OF OSCILLATION OF GASEOUS VORON TRICHLORIDE (BCL SUB3) AND ALSO THE DISINTEGRATION OF THE BCL SUB3 PRIME3 MOLECULE BY THE RADIATION OF A CO SUB2 LASER. THE DEPENDENCE OF THE RESONANT ABSORPTION COEFFICIENT ON PRESSURE IS SHOWN. MEASUREMENTS WERE MADE AT ROOM TEMPERATURE IN A VESSEL 10 CM LONG AND 2.8 CM IN DIAMETER WITH THE AID OF A IKS 21 SPECTROMETER. IN THE REGION OF NONHOMOGENEOUS BROADENING EXTENDING AT LEAST TO 5-7 TOR, THE VALUES OF THE ABSORPTION COEFFICIENT AMOUNTED TO ALPHA EQUALS 0.04 CM PRIME NEGATIVE1 TOR, WHICH CORRESPONDS TO THE ABSORPTION CROSS SECTION SIGMA EQUALS 1.1 TIMES 10 PRIME NEGATIVE18 CM PRIME2. THE SATURATION ABSORPTION WAS INVESTIGATED WITH THE AID OF A CO SUB2 LASER WITH AN OUTPUT POWER UP TO 100 WATT. THE TWO CHANNEL METHOD WAS USED FOR SIMULTANEOUS MEASUREMENT OF THE RADIATION POWER ENTERING THE VESSEL WITH THE BCL SUB3 AND LEAVING THE VESSEL. THE POWER LEVEL WAS CHANGED BY A GAS ATTENUATOR IN THE BCL SUB3. THE GAS ATTENUATOR MADE IT POSSIBLE TO CHANGE THE INTENSITY OF THE LASER BEAM, NOT CHANGING THE ENERGY DISTRIBUTION IN THE CROSS SECTION OF THE BEAM. CONTROL OF THE ATTENUATOR WAS ACCOMPLISHED BY A CHANGE OF THE GAS PRESSURE. THE AUTHORS THANK A. M. PROKHOROV FOR CONSTANT ATTENTION TO THE WORK AND FRUITFUL DISCUSSIONS, AND ALSO YU. B. KONEV FOR FREQUENT USEFUL DISCUSSIONS.

UNCLASSIFIED

USSR

ARAKSLOV, A. G., KOLESNIKOV, B. P., KONONENKO, V. A., LUK'YANOV, A. N.,  
MAIOV, V. V., POLYAK, L. Z., ROZANOV, A. N., and TITOV, B. V.

"Device for Studying Structural Changes in Refractory Metals and Alloys"

USSR Authors' Certificate No 356536, Cl. G 01n 23/20, filed 7 Dec 70, published 23 Oct 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 32, 1972, p 121)

Abstract: The device, which studies structural changes during high-temperature strain in a vacuum or other environment, contains a working chamber with a beryllium window located on the front cover, a loading mechanism, clamps for the specimen, heaters, mechanisms for measurements and the recording of readings. For purposes of studying the structure of a specimen during tests, the front cover of the working chamber has mounted on it a device for X-ray analysis with a mechanism for the vertical displacement of this device along the specimen and a mechanism for rotating it around a horizontal axis.

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USSR

UDC 621.373.51

ARALOV, D. P.

"A Parametric Frequency Divider"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratsovy, Tovarnyye Znaki, No 5, Feb 72, Author's Certificate No 327540, Division H, filed 8 Dec 69, published 26 Jan 72, p 155

Translation: This Author's Certificate introduces a parametric frequency divider for the microwave band. The device contains a section of coaxial line with parametric diode and two coaxial resonators. As a distinguishing feature of the patent, the power transfer coefficient is increased by making one of the resonators in the form of a section of coaxial line accommodating a choke and a coupling loop through which the diode is connected to the central conductor.

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USSR

UDC 621.372.061

ARALOV, M. S., Active Member of the Scientific and Technical Society of Radio Engineering, Electronics, and Communications

"Synthesis of Functional Characteristics in Electronic Devices"

Moscow, Radiotekhnika, Vol 26, No 10, 1971, pp 38-45

Abstract: A method is proposed for combining anode-grid characteristics, which differ with respect to shape, into a single more complex functional relation  $f(x)$ . The investigated method of synthesis of smooth periodic functions in electron tubes permits practical implementation of optimal multiplication of the harmonic oscillation frequency and also obtaining a set of oscillations and other forms of inertialess conversions. The results obtained provide a basis for assuming that in specially developed pentodes or tubes of another type, higher correspondence of the anode-grid characteristics to the given functions can be obtained. The method of implementing the functional characteristics, the conditions of implementing the periodic functional characteristics and the basic properties of real optimal amplifiers are considered.

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1/2 035 UNCLASSIFIED PROCESSING DATE--300CT70  
TITLE--VISCOSITIES OF MAGNESIUM OXIDE, ALUMINUM OXIDE, ZIRCONIUM  
DIOXIDE, SILICON DIOXIDE SYSTEM MELTS -U-  
AUTHOR--(02)-BEREZHNOY, A.S., ARAMIAN, V.G.  
COUNTRY OF INFO--USSR  
SOURCE--ARM. KHIM. ZH. 1970, 23(2), 201  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--FLUID VISCOSITY, LIQUID METAL, MAGNESIUM OXIDE, ALUMINUM  
OXIDE, SILICON DIOXIDE, ZIRCONIUM DIOXIDE, REFRACTORY MATERIAL,  
ACTIVATION ENERGY, ZIRCON  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1994/1892 STEP NO--UR/0426/70/023/002/0201/0201  
CIRC ACCESSION NO--AP0115711  
UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0115711

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VISCOSITY WAS DETD. FOR THE HIGH TEMP. COMPNS. FOR 6 CROSS SECTIONS OF THE MGO-AL SUB2 O SUB3-ZRO SUB2-SIO SUB2 SYSTEM (SPINEL-ZRO SUB2, FORSTERITE-ZRO SUB2, MULLITE-ZRO SUB2, FORSTERITE-ZRSIO SUB4, MULLITE-ZRSIO SUB4, AND NONEQUIL. CORUNDUM-ZRSIO SUB4) AS A FUNCTION OF COMPN. AND TEMP. FOR EACH CROSS SECTION 7 COMPNS. WERE OBTAINED BY ADDING 10-70 WT. PERCENT OF THE ZR COMPONENT. DETNS. WERE MADE IN THE RANGE 50-200DEGREES LARGER THAN THE M.P. ADDNS. OF THE ZR COMPONENTS AFFECT THE MOBILITY OF THE COMPNS.; THE OPTIMUM CONC. OF ZRO SUB2 EQUALS 10-30PERCENT OF ZIRCON EQUALS 20PERCENT. THE ACTIVATION ENERGIES OF THE VISCOUS FLOW WERE CALCD. AND THESE, ALONG WITH CALCD. VALUES OF THE STERIC FACTORS, ALLOW THE TEMP. TO BE DETD. AT WHICH THE VISCOSITY WILL REACH THE REQUIRED VALUE TO OBTAINED FUSED REFRACTORIES. REFRACTORY COMPNS. WERE SET UP AND RECOMMENDED WHICH SATISFY THE REQUIREMENTS FOR HIGH TEMP. MATERIALS.

FACILITY: EREVAN. NAUCH.-ISSLED. GORNO-MET. INST., EREVAN, USSR.

UNCLASSIFIED

Semiconductors and Transistors

USSR

UDC 621.382.2.029.6.001.5

ARANDAR', V. N., PROKHOROV, E. D., BAGROV, G. V.

"Investigating the Characteristics of the UHF Gunn Diode"

Moscow, Radiotekhnika i elektronika, No 10, 1970, pp 2150-2155

Abstract: This article describes complex experiments on Gunn diodes operating in the 3-cm wavelength range. The purpose of the work was to explain the effect of the various parameters of the diode material (GaAs) on the dynamic volt-ampere characteristic of the device, to explain the connection between that characteristic and the volt-watt characteristic and efficiency of the oscillators, and to find the optimal parameters of the diode material. The paper gives the form in which the volt-ampere characteristic was experimentally determined, how the volt-ampere characteristic depends on  $n_0$ , the carrier concentration, or on the product  $n_0L$ , what the correspondence is between the volt-watt characteristic and the efficiency of the diodes on the one hand and the dynamic volt-ampere characteristics on the other, and how the useful power and efficiency of the diode depends on  $n_0$  and  $n_0L$ . Details of the preparation of the diodes, the equipment involved in the experiments, and the experimental method are given.

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USSR

UDC: 669.018.4:621.785.78:546.261

GELLER, YU. A., MOISEYEV, V. F., ARANOVICH, A. O., and LEVINA, K. YA.,  
Moscow Machine Tool Institute

"Effect of the Carbide Phase on the Properties of Chromium Tool Steels"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1,  
1971, pp 145-148

Abstract: The effect of vanadium (1-4%) on the structure and properties of steels containing 3.6 and 12% Cr and 1.0-1.9% C has been studied. It was found that vanadium forms independent carbides at carbon concentrations above 1.6% with 12% Cr, at C concentrations of 1.1 and 0.85% with 6 and 3% Cr, respectively. In steels with lower carbon concentrations, vanadium dissolves in chromium carbides. Due to their high hardness (2200 HV), vanadium carbides raise the wear resistance of the steel and, by reducing the grain size, increase the steel's strength. When present in chromium carbides, vanadium (on hardening) goes into solid solution, causing the

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USSR

GELLER, YU. A., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1, 1971, pp 145-148

tendency of the steel to precipitation hardening on tempering at 540-560°C, which increases the strength but markedly decreases the steel's ductility (to a fraction of 2-3). Tables in the original article show the chemical composition of the experimental steels, the amount of the carbide phase, and the composition of carbides and the solid solution (as annealed). A figure demonstrating the effect of the hardening temperature on the strength of steel on bending after tempering at 150°C with 3, 6, and 12% Cr is also given.

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USSR

UDC 536.5.082.6(088.8)

ARANOVICH, R. M., VYATICH, L. A., FUKS-RABINOVICH, S. I., ALEKSEYEV, V. YA.

"Non-Contact Temperature Measurement of the Surfaces of Heated Objects"

USSR Author's Certificate No 250500, filed 28 Feb 66, published 12 Jan 70  
(from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 8, Aug 70, Abstract  
No 8.32.569 P)

Translation: A method of non-contact measuring of the temperature of surfaces of heated objects by means of scanning the thermal image of the object on the screen of a cathode ray tube and its analysis is patented. In order to raise the accuracy of measurement, two standard control heaters are introduced into the field of vision, the radiation intensity of one of them and a selected point on the image line are equalized and using this value as the known level of measurement and the known difference in radiation intensity of standard heaters as the temperature scale. The measured temperature is judged according to the corresponding voltage curve on the recording instrument.

V. S. K.

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USSR

UDC 621.382.2

KARASHEV, T.B., ARANOVICH, R.M., VAYNO, A.A., TALI, A.A.

"Effect Of Annealing Of Radiation Defects On The Electrical Properties Of P-N Junctions, Produced On High-Resistance P-Type Silicon By Bombardment Of Nitrogen Ions"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Non-Metallic Crystals--Collection Of Works), Minsk, "Nauka i tekhn.," 1970, pp 174-180 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2B134)

Translation: Injection of nitrogen ions with an energy of 34 kev with a current density of 10 microamp/cm<sup>2</sup> was performed in p-type Si with a resistivity of 1500--2000 ohm. cm. and an orientation of the surface in the (111) plane; the duration of irradiation was one minute and the residual pressure in the chamber 10<sup>-5</sup> mm. Annealing of radiation defects was conducted for 30 minutes at temperatures of 20--900° C. Thickness of the n-type layer amounts to 0.4 micrometer; the resistance of the layer decreases with an increase of the annealing temperature to 600° C and remains unchanged with a further increase of the temperature. The ratio of the average concentration of electrons to the concentration of injected ions  $\leq 5 \cdot 10^{-3}$ . The breakdown voltage of n-p junctions of annealed and non-annealed specimens amounts to 1500--1700 v. 6 ill. 6 ref. V.M.

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USSR

UDC 534.232-8

ARANOVICH, V.B.

"To A Computation Of Input Circuits Of Pulse Ultrasonic Devices"

Zap. Leningr. form. in-ta (Annals Of The Leningrad Mining Institute), 1969, 59, No 1, pp 38-46 (from RZh--Elektronika i yeye prizeneniye, No 6, June 1970, Abstract No 6A299)

Translation: A method of computation is proposed for capacitive and inductive types of transducers, as illustrated by input circuits with piezoelectric and magnetostrictive transducers. The method considered for determination of the parameters of input circuits with a step-up transformer assures the maximum possible transfer constant for a specified pass band. A table of the basic characteristics of transducers is presented. Computed formulas are derived for the case of narrow-band reception at a fixed working frequency. Criteria are obtained for the feasibility of a system with a maximum transfer constant. For magnetostrictive transducers, as contrasted with piezoelectric, the criteria of feasibility of an input circuit with an optimum transfer constant is almost always accomplished. 4 ref. 2 ill. 1 tab. L.T.

1/1

Magnesium

USSR

UDC 541.45:546.46:61.984.5

BOLYNETS, F. K., UDALOVA, L. V., ARANOVSKIY, L. I., and USACHEV, V. P.

"Study of the Kinetics of Compacting of Magnesium Oxide with Added Lithium Fluoride at Various Hot Pressing Temperatures"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8, No 2, 1972, pp 285-289

Abstract: The kinetics of compacting of magnesium oxide with added lithium fluoride (1.0 wt.%) by hot pressing in the 80-1100° C temperature interval was studied. The addition of lithium fluoride increases the rate of compacting of magnesium oxide beginning at 650° C.

At 850-1050° C, 3 stages of compacting are observed with slopes of kinetic curves in coordinates  $\log \Delta l / l_0$  from  $\log \tau$  equal to 0.95-1.40; 0.33-0.36; 0.1 respectively to intervals of densities of 0.96-0.97; 0.97-0.995 and over 0.995. Processes of recrystallization of magnesium oxide with the addition of lithium fluoride during hot pressing are studied. The activation energy of the process of recrystallization, equal to 25.7 kcal/mol, is determined from the temperature dependence of the increase in grain size, as 25.7 kcal/mol.

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USSR

UDC 632.9:595.768.12

ARAPAVA, L. I.; YACHENYA, S. V.; Belorussian Scientific Research  
Institute of Plants Protection

"Concerning the Destructiveness of the Potato Colorado Beetle"

Minsk, Izvestiya Akademii Navuk BSSR, Seriya Sel'skokhozyayst-  
vennykh Nauk, No 3, 1971, p 130

Abstract: Experiments on the destructiveness of the Colorado beetle were conducted in 1966-1967 in Pruzhanskiy Rayon, Brestskaya Oblast with the pest feeding on naturally infected potato fields with sandy soil and a flat topography. Possible losses to potato crops from the Colorado beetle in the absence of control measures in a single generation of the predator were studied. Results indicated that 25, 50, and 100% destruction of the leaf surface of the Vekaragis variety of potato reduced the crop yield by 30, 52, and 86% and the weight of tubers by 39, 64, and 97%; the figures for the Skorospelka 1, Zazerskiy, and Foran varieties are 12-28, 35-43, and 69-84% respectively, and for tuber weight 3-11, 40-54, and 86-98%. The quantity of starch

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USSR

ARAPAVA, L. I., et al, Izvestiya Akademii Nauk BSSR, Seriya Sel'skokhozyaystvennykh Nauk, No 3, 1971, p 130

was not reduced as a result of a 25% destruction of the leaf surface. A 50% injury to the potato plant reduced starch content in the tubers of the Foran variety 4.46%; a 100% injury in the Skorospelka and Foran varieties reduced starch content 2.07% and 4.76%.

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USSR

UDC 616.33+616.342]-002.44-035.849.112-  
073.97

CHISTYAKOVA, N. S., SKURIKHINA, L. A., MAMAYEVA, Z. K., and ARAPOVA, A. D.,  
Central Clinical Hospital, 4th Main Administration, Ministry of Health USSR,  
Moscow

"Dynamics of the Electrogastrogram During Comprehensive Therapy of Peptic  
Ulcer Including the Use of Microwaves"

Moscow, Voprosy Kurortologii, Fizioterapii i Lechebnoy Fizicheskoy Kul'tury,  
No 4, 1972, pp 341-344

Abstract: Electrogastrographic examination of 30 peptic ulcer patients showed increased electrical activity in most cases of duodenal ulcer in the acute and recurrent form, stages 1 and 2 in a state of exacerbation. Electrical activity was decreased in some patients suffering from stage 2 recurrent and chronic forms. Microwave therapy including medication normalized or improved gastric electrical activity. It also contributed to the relief of pain, disappearance or subsidence of dyspeptic phenomena, and cicatrization of the ulcer. No changes were noted in the stomach biopotential of patients treated with medication alone.

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1/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--ERRORS IN THE DIAGNOSIS OF UBLITERATING ENDARTERITIS -U-  
AUTHOR--ARAPOV, A.S. A  
CCUNTRY OF INFO--USSR  
SOURCE--KHIRURGIYA, 1970, NR 6, PP 130-133  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--DIAGNOSTIC METHODS, THROMBOPHLEBITIS, NERVOUS SYSTEM DISEASE,  
PAIN, ARTERY, CIRCULATORY SYSTEM DISEASE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1904 STEP NO--UR/0531/70/000/006/0130/0133  
CIRC ACCESSION NO--AP0129253  
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129253

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CLINICALLY AND BY MEANS OF FUNCTIONAL DIAGNOSIS THE AUTHOR EXAMINED 225 PATIENTS WHO WERE ADMITTED WITH A DIAGNOSIS OF OBLITERATING ENDARTERITIS. IN 53 (23.5PERCENT) PATINETS THE DIAGNOSIS WAS REJECTED. ERRORS IN THE DIAGNOSIS OF OBLITERATING ENDARTERITIS WERE DIVIDED INTO TWO GROUPS: IN THE FIRST THIS DIAGNOSIS WAS PLACED IN PATINETS WITH DIFFERNET PATHOLOGICAL PROCESSES, WITH NO DIRECT RELATION TO ARTERIAL INSUFFICIENCY IN THE LOWER LIMBS (FLATFOOD, OSTEOMYELITIS, CALCANEAL SPUR, THROMBOPHLEBITIS); IN THE SECOND, ERRORS WERE ASSOCIATED WITH DIFFERENT DISEASES OF THE PERIPHERAL NERVOUS SYSTEM, THE CAUSE OF MOST OF THEM WERE CONGENITAL ANOMALIES OR ACQUIRED AFFECTIONS OF THE LUMBOSACRAL REGION OF THE SPINE. ERRONEOUS DIAGNOSES WERE PLACED DUE TO OVERESTIGATION OF THE COMPLAINTS OF PAIN IN THE LEGS AND INCORRECT INTERPRETATION OF THE ABSENCE OF PULSE ON THE DORSAL ARTERY OF THE FOOT, IN PRESERVED PULSATION ON THE POSTERIOR TIBIAL ARTERIES. FACILITY: KAFEDRA ORTOPEDI I TRAVMATOLOGII ASTRAKHANSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

1/2 047 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--STRUCTURE SENSITIVE NATURE OF LUMINESCENCE QUENCHING OF INDUCED  
ACTIVATOR COLOR CENTERS IN NaCl, Ag CRYSTAL PHOSPHORS -U-  
AUTHOR--(02)--LUKANTSEVER, YU.L., ARAPOV, B.A.  
COUNTRY OF INFO--USSR  
SOURCE--OPT. SPEKTRGSK. 1970, 28(3), 498-501  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--CRYSTAL PHOSPHOR, COLOR CENTER, LUMINESCENCE QUENCHING, SODIUM  
CHLORIDE, SILVER, THERMAL EFFECT, RADIATION EFFECT, CRYSTAL ELECTRIC  
CONDUCTIVITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/1431 STEP NO--UR/0051/70/028/003/0498/0501  
CIRC ACCESSION NO--AP0118420  
UNCLASSIFIED

2/2 047

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118420

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TEMP. INDUCED LUMINESCENCE (THE LUMINESCENCE WAS EXCITED BY X RAY IRRADN.) QUENCHING OF B, AND C COLOR CENTERS WAS STUDIED IN NaCl-AG CRYSTALLOPHOSPHORS UNDER THE EFFECT OF DIFFERENT FACTORS THAT CHANGE THE CRYST. LATTICE, SUCH AS THE EFFECT OF CA, AND PB ADMIXTS. IN THE LATTICE AND THE EFFECT OF RADIATIONAL THERMAL TREATMENT OF CRYSTALS. THE THERMAL TREATMENT CAUSED THE DISTORTION OF COLOR CNTERS. EXCITATION, AND ABSORPTION SPECTRA OF PURE CRYSTALLOPHOSPHORS, OF CRYSTALLOPHOSPHORS WITH PB AND CA ADMIXTS., AND OF THERMALLY TREATED CRYSTALLOPHOSPHORS ARE SHOWN. THE LINE POSITIONS DID NOT SHIFT; THIS MEANS THE STRUCTURE OF THE COLOR CENTER WAS NOT CHANGED BY THESE FACTORS. THE OCCURRING CHANGES AFFECTED THE WHOLE CRYST. LATTICE. THE HYPOTHESIS THAT THE LUMINESCENCE QUENCHING WAS DUE TO AN IONIC MECHANISM (HARD RADIATION EXCITED LUMINESCENCE CENTERS INTERACT WITH THE DEFECTS OF THE LATTICE) WAS CONFIRMED BY THE SIMULTANEOUS TEMP. INDUCED QUENCHING OF THE LUMINESCENCE OF B CENTERS AND BY THE IONIC COND. OF NaCl-AG CRYSTALLOPHOSPHORS. FULL THERMALLY INDUCED QUENCHING OF B CENTERS OCCURRED AT 450DEGREES, THE TEMP. AT WHICH THE ELECTROCOND. OF THE CRYSTAL IS MOST AFFECTED.

UNCLASSIFIED

USSR

UDC: 51:801

ARAPOV, M. V., KARAPET'YANTS, A. M., MALINOVSKAYA, Z. M., PROBST, M. A.

"Some Problems in Deciphering K'itan Writing"

V sb. Issled. po mat. lingvist., mat. logike i inform. yazykam (Research on Mathematical Linguistics, Mathematical Logic and Information Languages-- collection of works), Moscow, "Nauka", 1972, pp 79-95 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V626)

Translation: Some of the work on studying K'itan texts is presented -- specifically, finding and classifying morphemes of K'itan word forms. K'itan texts in digital transcription served as the initial material.

The described work was made up of three main stages:

1. Division of blocks into fixed (the stem and possibly some word-forming suffixes) and variable (affixes) parts, establishing identities between a number of symbols; finding stable symbol combinations, and classification of post-fixal morphemes on the basis of their co-occurrence range.
2. Carrying out a formal procedure for dividing the variable parts into classes based on the division of blocks into variable and fixed parts, using the material of the first stage.

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ARAPOV, M. V. et al., Issled. po mat. lingvist., mat. logike i inform. yazykam, Moscow, "Nauka", 1972, pp 79-95

3. Classification of the variable and fixed parts of blocks in accordance with membership in a nominal or verbal paradigm on the basis of materials of the first stage, utilization of "parallel" passages in the texts, and by comparison with the Mongolian language. In this stage another division of blocks is used (based on the first, but differently constructed). Nearly all stages of the work, particularly the first, were characterized by iterative processes: new governing principles were used to refine those previously found. From the introduction.

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USSR

UDC 51:801

ARAPOV, M. V., YEFINOVA, Ya. N.

"The Complexity of a Control Tree"

Nauchno-Tekhn. Inform. Sb. Vses. In-t Nauchn. I Tekhn. Inform., [Scientific and Technical Information, Collection of All-Union Institute of Scientific and Technical Information], 1970, Series 2, No 10, pp 36-44, 49, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V703 by the authors).

Translation: A numerical characterization of the complexity of the syntactic structure of a sentence is suggested. The syntactic structure is represented in the form of a control tree. A number of theorems are proven concerning the class of trees having the minimum complexity. Functions are studied relating the number of points in the minimum tree to its complexity, and a number of its properties are determined.

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CSO: 1843-W

AA0053084

ARAPOV

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,  
Derwent, 5-70

244004

CONSTANT PRESSURE REGULATOR. The control of constant oil pressure in the

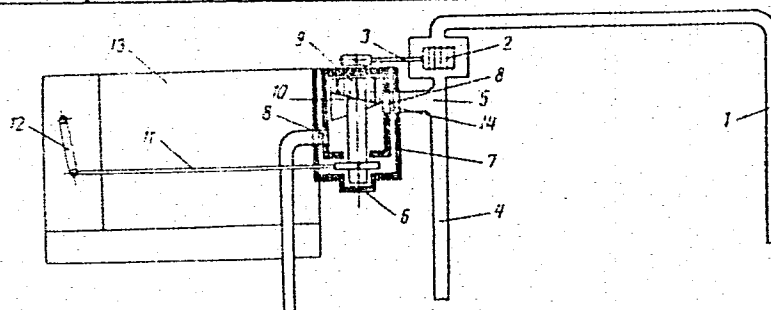
forced lubrication system of an internal combustion engine is achieved by coupling the thermostat 2 in feed pipe 1 through rod 3 to box valve unit 6 and coupling the shaft of the valve 9 to the metering rod 12 of the oil supply pump 13. Thus the pressure in pipe 5 regulates the output of the pump to feed pipe 1 and controls the pressure to pipe 4 and to the crankshaft bearings.

15.2.68 as 1218062/24-6 O.B. LEONOV et al. N.E.  
Bayman, Moscow, Technical College (3.10.69) Bul.  
17/14.5.69. Class 46c, Int. Cl. F 01m.

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19821982

AA0053084

Leonov, O.B.; Borovitskiy, V.I.; Arapov, V.V.; Manuylov, N.N.;  
Patrakhal'tsev, N.N.; Soldatov, N.K.; Moskovskoye Vyssheye  
Tekhnicheskoye Uchilishche im. N.E. Baumana



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19821983

1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--EFFECT OF AN EXCESS OF ZINC AND SULFUR ON THE EDGE RADIATION OF  
ACTIVATOR FREE ZINC SULFIDE PHOSPHORS -U-  
AUTHOR-(04)-LEVSHIN, V.L.; ARAPOVA, E.YA.; VORONOV, YU.V.; TIMOFEYEV,  
YU.P.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(4), 674-81  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, PHYSICS  
TOPIC TAGS--UV RADIATION, ZINC, SULFUR, LUMINESCENCE, ZINC SULFIDE,  
ELECTRON BEAM EXCITATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/1450 STEP NO--UR/0368/70/012/004/0674/0681  
CIRC ACCESSION NO--AP0135121  
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0135121

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ZNS PHOSPHORS, WITH AN EXCESS OF ZN OR S, WERE PREPD. BY A PREVIOUSLY DESCRIBED METHOD (. ET AL. 1966) AND THEIR SPECTRA WERE RECORDED PHOTOELEC. WITH THE AID OF A QUARTZ MONOCHROMATOR AND A PHOTOMULTIPLIER, AFTER EXCITATION BY AN ELECTRON BEAM AND BY MONOCHROMATIC UV LIGHT AT 313 NM. THE EXCESS ZN AND S HAVE A QUENCHING EFFECT ON THE "EDGE" LUMINESCENCE. HENCE, THEY CANNOT ACT AS UV LUMINESCENCE CENTERS.

UNCLASSIFIED

Steels

UDC 669.15'24'26:002.25:531.3

USSR

ARAFOVA, L. V., RYZHAK, S. S., and KAGAN, Ye. S.

"Aging Kinetics of Nickel and Chromium-Nickel Alloys Containing Aging-Prone Martensite"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 10, 1972, pp 10-15

Abstract: The aging kinetics of two low-carbon ( $\leq 0.03\%$  C) steels, N18K9M5T and Kh11N10M2T, was studied. Hardness ( $\Delta$ HRC), electrical resistance ( $\rho$ ), and coercive force ( $H_c$ ) were determined during the aging tests, which were carried out at 400-500°C. A heating of both steels at 480°C for 15 sec sharply increased hardness and decreased  $\rho$  and  $H_c$ . Both steels were characterized by a rapid hardening in the process of maximal aging. The lower the aging temperature, the greater the hardness. But it took a longer time to reach maximal hardness. The coercive force decreased with the increase of the heating time during aging at 400 and 425°C. However, at 475 and 500°C it decreased at first, then it increased sharply. Cold working did not intensify the aging process but the coercive force increased sharply. The electrical resistance decreased for both steels with increased hardness, but when the hardness reached its peak the electrical resistance remained unchanged. The

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ARAPOVA, L. V., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 10, 1972, pp 10-15

coercive force changes during aging of these steel at 400-500°C for 100 hr did not reflect the aging process. Addition of 0.8% Ti to a Fe-Ni-Ti alloy increased its hardness to  $\Delta HRC$  18 but the addition of 0.9% Ti to Kh11N10M2 resulted in  $\Delta HV_{10}$  150 because Ti in this alloy was the only element which caused the aging. After addition of 0.8% Ti to Fe18Ni15Mo the  $\Delta HRC = 8$  at maximum aging, but when the same amount of Ti was added to an alloy containing Co and Mo the hardening effect of Ti was  $HRC = 4-5$ .

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USSR

UDC: 624.131.43+539.21.084-492.3

ARARKTSYAN, G. M., BAGDASARYAN, A. B.

"Concerning Investigation of the Motion of a Mudslide"

Sb. nauch. tr. Yerevan. politekhn. in-ta (Collected Scientific Works of Yerevan Polytechnical Institute), 1970, 25, pp 52-57 (from RZh-Mekhanika, No 5, May 72, Abstract No 5V498)

Translation: The paper discusses the particulars of a mudflow (mountain flows of water saturated with solid matter). In contrast to the action of conventional water flow against a barrier, where there is no time for the development of a shock wave, in the case of a mudslide the time of shock wave development is shorter, which is due to the slow speed of the relief waves and to the colloidal properties of mud. The authors discuss use of a viscoplastic model (Bingham medium) for describing a mudslide. Specifically, simple expressions are given for the velocity of mudflow as a function of slope, yield stress and the coefficient of viscosity. These expressions can be used for experimental verification of the applicability of this model. Bibliography of 11 titles. R. I. Nigmatulin.

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USSR

UDC 621.372.85(088.8)

A  
KHARECHKIN, N. A., ARASLANOV, D. F.

"Power Divider"

USSR Author's Certificate No 248803, Filed 8 Jun 67, Published 15 Jan 70  
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B151P)

Translation: The proposed coaxial power divider contains an outer tube and three quarter wave coaxial sleeves which are closed by ring connectors at the base on the outer tube, an inside conductor and 16 coaxial outputs of identical wave impedance which are arranged on the outer tube in different cross sections of the divider in identical groups of four outputs each with an interval between cross sections equal to the height of the sleeves. The internal conductor of the four coaxial outputs on the base of the divider are connected to the internal conductor of the divider. The internal conductors of the remaining 12 outputs are connected in groups of four to the three  $\lambda/4$ -sleeves. The wave impedances of the four sections of the divider coaxial are equal to the total loads connected to these segments, and they increase stepwise from the base to the input of the divider as the loads are connected. Variation of the wave impedance is achieved in steps by varying the diameter of the inside conductor of the divider or by varying the outside diameter of the coaxial. The power coming to the divider input

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KHARECHKIN, N. A., et al., USSR Author's Certificate No 248803, Filed 8 Jun 67, Published 15 Jan 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B151P)

is divided evenly between the groups of outputs and all the outputs of the divider. The phase at the divider outputs is delayed with respect to the phase at the input by an amount proportional to the ratio of the length of the coaxial from the divider input to the corresponding output to  $\lambda$ . The phase shift between the first group of outputs from the divider input and all the remaining ones increases from group to group by  $90^\circ$  on the middle frequency of the operating band. The design of the divider insures an increase in its wide band nature and improvement of uniformity of power division. There is one illustration.

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USSR

UDC 615.919:591.145.2.615.918:58.615.9:576.8.097.29

ORLOV, B. N. and ARATEN, S. M.

"Influence of Calcium Ions on the Development of the Suppression of Spinal Cord Activity by Cobra Venom"

Uch. zap. Gor'kov. un-t. Ser. biol. (Educational Proceedings of the Gor'kov University, Biological Series), Vyp 40, pp 40-43 (from Referativnyy Zhurnal -- Farmakologiya. Khimioterapevticheskiye Sredstva. Toksikologiya, No 1, 1973, Abstract No 1.54.778 by V. K.)

Translation: The electric potential of the sciatic nerve in frogs -- maintained in a Ringer solution containing 1.08, 5, 10, and 0.14 m moles  $Ca^{++}$  and treated with a 1% solution of the venom (I) from the Central Asian cobra -- was studied to determine the time in which the amplitude decreased by 50%. The increase in  $Ca^{++}$  concentration to 5 m-moles definitely increased the stability of the preparation towards the effect of (I). It was shown that a suppressing effect developed due to the deactivation of the Na-conducting membrane. In experiments with nerves from which the epineural sheath had been removed, a reduction in the  $Ca^{++}$  concentration to trace amounts also increased the stability of the preparation to the effect of (I). Under these conditions the phospholipase A combines with the inhibitor (I).

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USSR

UDC: 519.2

ARATO, Matyas, BENCZUR, Andras

"Results of Modeling the Distributions of Estimates of the Parameters of a Simple Gaussian Process"

Magy. tud. akad. Szamitastechn. kozp. kozl., 1972, 8, pp 3-35  
(from RZh-Kibernetika, No 5, May 73, abstract No 5V243 by A. Novikov)

Translation: A Monte-Carlo method is used to study the behavior of different estimates for the parameter of the mean and the parameter of damping  $\lambda$  of a stationary Gaussian Markov process with correlation function  $(\frac{1}{2}\lambda)\exp(-\lambda|\tau|)$ . A modeling program and table of empirical quantiles are given for these estimates. It is noted that lower confidence limits cannot be constructed from the estimates for the parameter  $\lambda$ . Modeling was done on the SDS 3300 computer with Fortran programming.

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1/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--REACTION OF MAGNESIUM BICARBONATE AND CALCIUM HYDROXIDE -U-  
AUTHOR--(03)-ARAV, R.I., MILOVIDOVA, L.V., MARAGINA, L.G.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 498-501.  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CALCIUM HYDROXIDE, MAGNESIUM CARBONATE, REACTION KINETICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/1945 STEP NO--UR/0080/70/043/003/0498/0501  
CIRC ACCESSION NO--AP0118907

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--23OCT79

CIRC ACCESSION NO--AP0118907

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A STUDY OF THE INTERACTION KINETICS OF  $Mg(HCO\ SUB3)SUB2$  AND  $Ca(OH)\ SUB2$  IN RELATION TO THE INTRODUCTION OF  $MgCO\ SUB3$  .3H  $SUB2\ O$  AND  $CaCO\ SUB3$  CRYSTALS SHOWED THAT WITH AN INCREASE OF  $CO\ SUB3\ (OH)\ SUB2$  CONTENT, THE PROCESS TIME IS SHORTENED BY APPROX. A FACTOR OF 4. A TEMP. INCREASE SPEEDS UP THE PPTN. OF  $Mg\ IONS$ . FACILITY: KRYM. FINIAL GOS. NAUCH. ISSLED. INST. STROIT. MATER. IZDELII, USSR.

UNCLASSIFIED

USSR

UDC 629.12.037.002.83:621.74.04.002

ARAVIN, B. P.

"New Materials and Technological Process for Casting Screw Propellers"

Leningrad, Sudostroyeniya, No 10, 1971, pp 52-54

Abstract: The characteristics and a comparative evaluation of new materials for manufacturing propellers are presented, and a new process for casting them is outlined. The new materials include Br.AZhN9-4-4 aluminum-nickel-iron bronze and Neva-60 and Neva-70 manganese-aluminum bronze. Chill casting and casting in ceramic molds are highly prospective means of casting the propellers made from the new alloys. It is predicted that by 1975 about 80% of the screw propellers up to 2.5 meters in diameter will be manufactured by these two methods (60% by chill casting and 20% in ceramic molds). Requirements determining the machining allowance for the propellers are also discussed.

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USSR

ARAYS, Ye. A., SIBIRYAKOV, G. V.

"The Avto-Analitik Programming System"

Vychisl. Mat. i Vychisl. Tekhn. [Computer Mathematics and Computer Technology -- Collection of Works], No 3, Khar'kov, 1972, pp 26-27, Discussion 71-77  
(Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V685, by the authors).

Translation: The Avto-Analitik system, designed for the performance of analytic numerical conversions on the BESM-6 digital computer, is studied.

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